

## ATTACHMENT A

### RECOMMENDED WATER QUALITY ACTIONS

#### ORGANIC CARBON

##### Immediate (Years 1-2)

- **Pilot Studies to Remove TOC** - Evaluate feasibility of removing TOC in agricultural drainage on Twitchell Island and one of the Central Delta islands.
- **Drinking Water Protection Strategy** - SWRCB, CVRWQCB, and DHS develop strategy to address projected impacts on water quality from increased municipal waste discharges and urban runoff to Delta and tributaries.
- **Pilot Active Land Management Projects** - Provide funding to conduct pilot active land management projects in Central Delta to assess economic success while reducing drainage quantity and improving drainage quality.
  - conversion to early season crops
  - less water intensive irrigation systems
  - low tillage crops
  - conversion to wetlands
- **Evaluation of Ecosystem Projects** - CALFED must evaluate impacts of ecosystem restoration projects on TOC and implement projects that will benefit or not adversely affect drinking water quality. Water quality must be component of ERPP and evaluation of ERPP.

##### Near-term (Years 3-7)

- **Store Summer Drainage** - On individual islands in Central Delta that have high estimated drainage volume and high DOC concentrations and release on ebb tide.
- **Store Winter Drainage** - Where feasible, store winter drainage on individual islands in Central Delta and release on ebb tide.
- **Expand Storage to Include Additional Islands** - Investigate feasibility of including other Central Delta islands that have high estimated drainage volume and moderate DOC concentrations (Tyler, McDonald, Bacon, Lower Jones Tract, Woodward, and Victoria) in storage and release system.

- **Investigate Additional Measures** - To reduce impacts of discharges on water quality (e.g. reduce frequency of winter leaching in Central Delta, collection of drainage and discharge to Sacramento River).

#### **Long-term (>7 Years)**

The following actions depend upon the evaluations conducted in the first seven years of the program and decisions that are made on storage and conveyance alternatives.

- **Collect and Store All Drainage** - On individual islands in Central Delta and release on ebb tide.
- **Central Delta Drain** - Collect drainage from Central Delta islands and discharge to Sacramento River or further downstream.
- **Treatment** - Collect drainage from Central Delta islands and treat for TOC removal. Discharge concentrated residual drainage in a remote location.

### **SALINITY**

#### **Immediate (Years 1-2)**

- **Joint Point-of-Diversion Operation** - Pump CVP water supplies at available capacity at Banks Pumping Plant when higher-TDS CVP supplies would otherwise be pumped from the DMC into O'Niell Forebay.
- **Encourage Source Reduction Programs** - Such as tiered pricing. Programs cannot adversely impact control of root zone salinity. (\$255,000 in 319 funding for Economic Incentives Program).
- **On-farm Water Conservation** - Expand existing program and increase funding to encourage on-farm water conservation practices to reduce subsurface drainage discharge volumes without adversely impacting control of root zone salinity (SRF loans have already funded some projects).
- **Drainage System Recirculation** - Expand existing programs to reuse subsurface drainage water and reduce discharge volumes.
- **Expand San Joaquin River Real-Time Monitoring Program** - Include Grassland Drainage Area. Time drainage and wetland discharges with periods with considerable assimilative capacity for dissolved solids in the river.

- **Active Land Management** - Expand and fund programs to reduce volume of subsurface drainage.
- **Agroforestry Pilot Studies** - Expand and fund projects on agroforestry.
- **Treatment Pilot Studies** - Develop workplans for pilot studies on treating drainage water to remove salinity and investigate market potential for salt.
- **Selenium Removal/Reduction Pilot Studies** - Conduct pilot studies on selenium reduction/removal processes with the goal of making solar evaporation ponds feasible for in-Valley drainage disposal.

#### **Near-term (Years 3-7)**

- **DMC Recirculation** - Investigate feasibility of recirculating water from the Delta Mendota Canal to the San Joaquin River to improve salinity in San Joaquin River and South Delta without increasing the salinity load.
- **Treatment Pilot Studies** - Conduct pilot studies on treating drainage water to remove salinity and continue investigation of market potential for salt.
- **Integrate Ecosystem Channel Modifications** - Integrate ecosystem channel modifications with operational adjustments to improve water quality.

#### **Long-term (>7 Years)**

- **Agroforestry Programs** - Saline drainage water used to irrigate salt tolerant trees. Concentrates and reduces drainage volume for subsequent treatment and disposal of salt.
- **Treatment of Drainage Water** - To remove salt and Selenium. Would reduce drainage volume and provide water supply. Residual salt disposal needed.
- **Develop Market For Residual Salt** - Created by other actions.
- **Out Of Valley Drain** - Convey drainage and/or residual salts to location where sensitive habitats would not be impacted.
- **Land Retirement** - Retire lands where all other options have proven infeasible. Water districts should retain water rights and management of the lands.

## BROMIDE

### Immediate/Near-term (Years 1-7)

- No source control actions are recommended at this time because seawater is the primary source of bromide.

### Long-term (~7 Years)

- Relocate Diversion Point - Reduce seawater influence on drinking water supplies.
- Treatment - Treat Delta water to remove bromide.
- Treatment - Where feasible, use membrane technology to remove pathogenic microorganisms to reduce need for high disinfectant doses.
- Storage - Use storage to capture higher quality water.

## PATHOGEN

- No source control actions are recommended at this time because we need a better understanding of sources of pathogens and concentrations in Delta waters.

### Long-term (>7 Years)

- Treatment - Where feasible, use membrane technology to remove pathogenic microorganisms to reduce need for high disinfectant doses.

## RESEARCH AND DATA NEEDS

### Immediate (Years 1-2)

- Delta Drainage Volume - Work with Delta farmers and coordinate with levee program to obtain drainage volume data. Reevaluate areas to be considered for drainage relocation and treatment based on better drainage volume measurements.
- Bromide in San Joaquin River - Research on sources of bromide in the San Joaquin River and relative contribution to south Delta concentrations.
- Bromide Panel Recommendations - EPA/DHS follow-up on recommendations of CALFED Bromide Panel for health effects studies.

- **Pathogen Sources** - Develop workplan for study on sources of pathogens in Delta and tributaries.

**Near-term (Years 3-7)**

- **Sources of TOC** - Conduct study of sources of TOC in Sacramento River watershed, San Joaquin River watershed, and Delta. Evaluate BMPs for high load sources.
- **Pathogen Sources** - Conduct study of sources of pathogens in Delta and tributaries and evaluate BMPs